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TREATMENT

OF

CONGENITAL CLEFT PALATE.

By NORMAN W. KINGSLEY.

READ BEFORE THE SOCIETY OF DENTAL SURGEONS OF THE CITY OF NEW YORK, AT THE COOPER INSTITUTE, SEPTEMBER 27TH, 1865.

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TREATMENT OF CONGENITAL CLEFT PALATE.

Mr. President and Gentlemen:—Allow me to thank you for the honor you have done me in inviting me to address you on this occasion, and also to thank the joint committee of the New York and Brooklyn societies, for their efforts to make the evenings devoted to the discussion of the treatment of Cleft Palate interesting to both dentists and surgeons.

To comply as far as possible with the arrangements of that committee, in devoting two evenings to this subject, I propose at this first meeting and in this paper to direct your attention to the evils of this deformity, and a discussion of the relative merits of surgical operations and mechanical appliances for their remedy; and the subsequent meeting to a description of the means used in the construction and adaptation of artificial palates.

An experience of over six years, and the successful application of artificial vela for nearly thirty different patients, coming from various parts of the world, has enabled me to form quite decided opinions on this subject; and it is my desire at these meetings to impart all the information I possess, and has been my endeavor to adapt this paper to the most ordinary comprehension.

The attention of both surgeons and dentists has been directed much more to this deformity within the last few years than formerly; and as the cases presented grew more manageable with increasing skill, the interest in them and the number of cases seemingly also increased. Whether there be an increase proportionately, or whether the apparent increase is the result of greater attention given to the subject, the writer has no statistics or other means of knowing. It must, in the nature of things, be coëval with other ills to which the human subject is heir. Frequent reference is made by the older authors to its existence, but the primal cause of this deformity thus far remains unknown and beyond our control; no research has unfolded it; all we know is, there is an arrest of development in the earlier months of fœtal life.

It does not seem to any extent to be entailed or transmitted to offspring. In but few instances which have been brought to my knowledge has there been any evidence that the defective organization was inherited. In some instances it has appeared in several children of the same parents; but in a large majority of cases

they are the solitary instances in the family. Neither is there any uniformity in its extent. If we take the uvula as the starting-point, we sometimes find merely a bifurcation of that organ, and from this very slight defect it is presented with every gradation of extent into the velum, to the posterior edge of the palatine bones, to the base of the alveolar ridge, and sometimes dividing the maxilla along the line of either or both the nasal passages.

The only evils arising from this deformity worthy of our attention are its influence on deglutition and articulation. These functions being unlike each other, in the fact that the former is natural, while the latter is an acquired or a mechanical function, it will readily be seen that the loss of any of the organs concerned may influence the two in a very different manner. A person suffering from a congenital defect of an organ concerned in a natural function, may, by repeated efforts, acquire such control over the remaining organs, as to experience no real discomfort from their defect. So, with a child born with a defective velum or palate, it must, of necessity, find the function of deglutition during all the earlier period of its life, and especially while it is dependent upon fluids for nourishment, much impaired. To such an extent have these poor unfortunates suffered from this deformity, that there is no doubt many lives have been sacrificed solely from want of nourishment. But when the deformity is discovered by the nurse, and accommodation made to meet the child's condition, it is very soon able to obtain all the food necessary to its development, and long before it has attained years of discretion it has obtained such control over the remaining organs of deglutition as never to experience any great discomfort from the defect. I have never conversed with an intelligent patient who was troubled with a regurgitation of food, either fluid or solid, unless the head was inclined considerably forward. In fact the physical comfort of an adult patient with congenital fissure of the palate is in no way seriously impaired.

But in regard to the mechanical function—that of making articulate sounds—it is quite another thing. The perfection of speech being dependent entirely upon the intelligent use of perfect organs of speech, it follows, as a necessary consequence, that no amount of repeated efforts or practice can make up for the absence of organs essential to that acquirement. It follows, also, that nothing can produce this result short of restoring to a certain degree of perfection the defective organs. We can, therefore, come to no other conclusion than that the only demand for any method of treatment is with a view of improving the speech.

It is necessary, before proceeding further with this subject, that we understand pretty fully the mechanical action of the organs concerned in articulation, and particularly the offices of the velum; also, for the purposes of this discussion, I desire to

draw a marked distinction between voice and speech. The terms are often confounded, even by learned men, when treating of this subject, in a manner which seems to me unjustifiable.

The term "voice" is in common use when speech is undoubtedly meant, and to such an extent, that in reading the works of authors on this subject, it is sometimes difficult to know whether it is simply an improvement of voice they refer to, or whether the term is meant to include articulation. By this explanation only can I reconcile some apparent impossibilities.

For the present, therefore, let us consider the term "voice" as applying to all the elementary sounds of language formed in the larynx, and speech as applying to the modulations of such sounds, by the organs situated between the pharynx and lips inclusive. The voice is not affected by a fissured velum.

It does not seriously interfere with vocalization. With an ear for music, a person afflicted with this deformity may be educated to the production of all the harmonious sounds of vocal music.

Singing, then, is not necessarily peculiar, but all those elementary sounds of articulate language which are modified to a greater or less degree by the velum, are more or less defective, dependent to some extent upon the size of the fissure.

The foregoing remarks apply to the voice as affected by a cleft palate, when it is not complicated with hare-lip.

The influence of hare-lip upon the voice is marked and peculiar when associated with a fissured velum. I have seen a few cases where the deformity was confined entirely to a fissure of the lip, extending into one of the nostrils, but they were all adult cases, and such admirable operations had been performed in childhood upon the lip in each case, that there was not the slightest defect of articulation or peculiarity in the tone of the voice. But hare-lip, when associated with cleft palate, may be considered as a prolongation of the cleft extending forward, following the channel of one or both nares, and terminating in an enlarged nostril and a divided lip. The enlarged naris and distended nostril give a peculiar and unpleasant tone to the voice. I would therefore urge upon surgeons in operating for hare-lip, the necessity of contracting the nostril to as nearly as possible the natural size.

It is of much more importance to the patient that the size of the nostril should be reduced than that there should be a uniform border obtained to the lip.

If there should be a small notch left in the edge of the lip from a defective union, the lower lip will be able to meet it and close the oval opening; but if an unnaturally large nostril is left, the compressor nasi muscle will not have the power to close it, and thus assist in the formation of sounds that belong to articulate language.

It is the modifications of the voice, by the organs before alluded to, which come to be understood in the process of time, as speech. Articulate language, therefore, to be clear, distinct,

and uniform, must be the result of the intelligent use of comparatively perfect organs. The improper use of or the absence of perfect organs can only result in defective articulation.

I am surprised that this matter should have been overlooked in many instances by professed elocutionists.

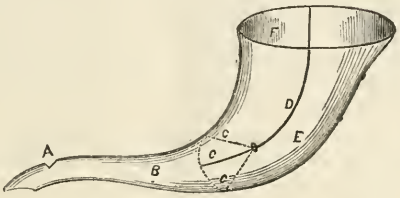
I have known professors of elocution receive as pupils persons suffering from defective organs of speech, with the encouragement of perfect articulation held out as the result of education. It is physically impossible for such a result to follow under such circumstances. So far as I have read, it seems to me too little credit has been given to the velum, by physiologists, as an organ of speech. I would, therefore, claim for it that it exercises a more important office in the modulation of sound than any other organ except the tongue. By it, in conjunction with the pharynx, the voice is directed entirely through the oral cavity. By it, in conjunction with the tongue, the voice may be directed entirely through the nasal cavity; and by it the voice may be divided and directed through both channels. On it depend the tongue, teeth, lips, and other organs of speech of the oral cavity for their current of voice, out of which to make articulate language. It is essential to the purity of any spoken language with which the writer is acquainted, that, to produce certain sounds, the passage from the pharynx to the posterior nares should, at times, be entirely closed, while for other sounds it should be entirely open, permitting the whole voice to pass in that direction. And in this connexion let me not be understood as confounding the uvula with the velum. So far as my observations extend, the uvula exercises no control over the voice; and so far as any injury to articulation might follow, the uvula may be entirely removed, *providing the velum and the pharynx have the power of closing the posterior nares.*

Let us for a moment illustrate this point by a single diagram, for I maintain that upon the thorough understanding of this principle must be founded all intelligent treatment of congenital cleft palate. Let us consider, then, the passage from the glottis through the mouth, and through the nares, as a single and simple musical wild instrument. This diagram of a supposed musical instrument will more fully illustrate my meaning. A, may be called the larnyx or glottis, where the sound is produced; B, the pharynx; F, the mouth; E, the nares; D, a permanent partition (the palate); C, a valve hung on a hinge at the edge of the palate; D, representing the velum with its free end under such control as to direct the sound at will, either through the nares, E, the mouth, F, or divide and direct through both.

Admitting that such an instrument as this might be capable of producing harmonious sounds, it follows that all instruments made uniform with it would produce uniform results; but let a new opening be made for the escape of sound, for instance, through the valve C, and the capabilities of the instrument are

destroyed. It is no longer possible for it to produce the same result.

It is no stretch of the imagination to say that the principle applied to the above-described instrument will apply with just as



much force to the natural musical organs. With congenital fissure of the palate it is, therefore, physically impossible for a person to speak the same language as those with perfect organs; and in this way only, in many cases, is this deformity betrayed to the society in which the person moves.

It becomes us, therefore, not only as a matter of professional pride, but on far higher and more noble grounds—those of philanthropy, of sympathy with a class of unfortunates, in many cases as intelligent, as refined, and as sensitive as their more fortunate neighbors, though deprived by nature of one of the most delightful acquirements of man—it becomes us to use every means in our power, not to perform brilliant operations merely to gratify our pride, but to accept and use all such means, and only such means, as shall give hope of their restoration to society. I hold it to be the bounden duty of every professional man to seek, by the use of every means within his reach, the highest good of his patients. He has not discharged his obligation when he accepts a trust, until all has been accomplished that human aid can give. It is not uncommonly the case that a practice is continued because it has grown venerable with age, and will not yield to a better method through jealousy or pride. The patient, then, must be the sufferer.

Such a course will unquestionably, sooner or later, degrade the profession. Neither is any man justified in adopting any method of treatment which, however successful the result may be, inflicts unnecessary pain. It is not possible in our profession, or that of surgery, to which it is so nearly allied, to always render the best of services without the infliction of severe pain; but it is possible, by delicacy of manipulation and by consummate skill, the result of practice, to lessen the severity of suffering, and bring it within the forbearance of the patient. This matter of relief from the infliction of pain is, I fear, too little considered by our profession, and from it has, not unnaturally, grown up the dread of the "horrid Dentist." There is a gentleness of touch, a freedom from pain, in our operations, which is not all inconsistent with tho-

roughness. When two methods of treatment present themselves, admitting that either promises the same result, we are not justified in adopting one which may entail suffering on the patient, while the other is open to us with entire freedom from it.

In the treatment of fissured palate, the operation of staphyloraphy has long held its rank as the treatment *par excellence* for this deformity, and, although during all the earlier years of its history it was accompanied with varying success, it has, nevertheless, been called in practice so often that, in a surgical sense, little else can be desired or hoped for. That this should seem at first the most desirable treatment for fissured palate all must admit. A patient is presented with a concealed deformity, but his speech betrays him. An examination discloses the fact, that the membranous curtain which divides the oral from the nasal cavity is split from uvula to palatine bone; but its sides are soft and elastic, and it is observed in the process of deglutition that the sides of the cleft approach and come in contact with each other. What more natural, then, than the suggestion to pare the edges of the cleft and unite them by suture, and thus form a perfect septum in place of an impaired one?

I will not here go into an analysis of the different methods of performing that operation now practised by various surgeons. Mr. Fergusson, F.R.C.S., F.R.S., of London, is now universally recognised as having had greater experience than any other surgeon who ever lived. I speak from memory when I say that he has operated on about two hundred and fifty cases, and claims, I believe, that nearly every one was a success; that is, in a surgical sense, he had obtained some union, either partial or complete, in all these cases but two or three.

As a rule, he divides the levatores palati on either side, so as to destroy the tension on the sutures.

Mr. Pollock, F.R.C.S., surgeon to St. George's Hospital, London, has probably performed the operation as often as any other man, with the exception of Mr. Fergusson.

I had the pleasure of frequent conversations with him upon this topic within the past year, and although possessing consummate skill, and ranking as high as any surgeon in Great Britain, he does not claim for himself such unvarying success as does Mr. Fergusson. His method varies somewhat from Fergusson's, but he nevertheless divides the same muscle and arrives virtually at the same result.

Other operators of London are more or less imitators of the foregoing. I was introduced by Professor Syme of Edinburgh to a pupil of his, Professor Annandale, also of Edinburgh, a young man of fine promise, who has recently met with much success in his operations for this deformity on a different and what I conceive to be, when practicable, a far better method. His operation consists in making an incision in the mucous membrane parallel with the lingual surfaces of the teeth, and dissecting off

the tissue, finds it sufficiently relaxed to bring the edges of the fissure together, when they are united in the usual way. He claims his ability by this method to not only obtain a union without the destruction of any muscle, but to obtain also a deposition of bone by the bridging over of the fissure in the hard palate with the periosteum dissected off and drawn from the sides. He has to all appearance accomplished this in more than one instance.

In Paris, while the operation of staphyloraphy was first accomplished by a Frenchman, and while the hospitals of Paris boast of some of the most skillful surgeons living, this operation has been almost if not entirely abandoned.

In our own country, so far as I can learn, there has been no such extensive experience as that recorded of the hospitals of London.

To Warren of Boston, and Mutter of Philadelphia, has been accorded I believe the most experience of any in the country. But either the deformity is more rare, the cases more scattered, or the aid of the surgeon is not called in, and thus no one man has acquired such extensive practice in this line as have some abroad. But thanks to all these men and many others, they have by their consummate skill carried this operation to such a state of perfection that they have proved all that can ever be claimed for it. Whatever may be the future of staphyloraphy, their operations will form a brilliant page in the history of surgery.

I have dwelt at some length in the beginning of this paper on the only object of any treatment of congenital cleft palate, being with a view of improving articulation. How will staphyloraphy stand the test? Has it, as a rule, enabled the patient to conceal the evidence of the deformity from society? Or, in other words, has it proved in any number of cases that it can be relied upon to enable a patient to articulate so clearly and distinctly as not to continually betray the defect? That it does improve articulation in many cases somewhat, and perhaps all more or less, all candid minds must admit, from the abundant statements to that effect. But if there is no serious difficulty experienced from a fissured palate in deglutition, and the only discomfort worthy of notice is the mortification arising from unintelligible or defective articulation, how far does limited improvement in speech answer the end desired and hoped for, and how far does it justify a tedious and painful operation, so long as the deformity is still patent to all? In this connexion let me quote from the highest living authority.*

"The grand practical object of this operation is to improve the voice and articulation. Defective deglutition from this malformation is what attracts the mother's or nurse's attention in early life. The cries of infancy are in nowise peculiar in tone; but when definite articulation commences, or rather should commence, the value of an entire palate is then appreciated. The air and sound,

* Mr. Fergusson, F.R.C.S., F.R.S., June, 1861.

in passing outwards through the larynx, escape in part through the nostrils by the split in the palate. A nasal twang is the result, and articulation as in the normal state is impossible. Immediately after the operation the modification on the voice can be at once detected. . . . Improved articulation, however, comes slowly. Years, many years, are required for distinct articulation; and after the most successful operation for cleft palate months and years are required to alter defective sounds. Voice and speech have to be modified anew. With some the changes come slowly and sluggishly; but with others they are so rapid and perfect that within a few years the original defect cannot be detected except by a practised ear." Out of the large number of surgical successes, is it a rule that the patient is recompensed for the suffering undergone by the result obtained? I must confess I have no statistics to offer you in answer to these inquiries. While I have seen many cases where there was a good union throughout the entire length of the former fissure, I have never seen one where the speech was not more or less defective, nor where the friends considered that it was *very materially* improved. And the opinions now entertained in France may be said to perfectly coincide with those I have here advanced.

In the London "Lancet" of Nov. 19, 1864, I find a review of an article furnished by Mr. Pollock on "Staphyloraphy" for the fourth volume of "Holme's System of Surgery," from which I make the following extract:—"It is, we believe, a fact that the success which French surgeons have met with in this operation is so indifferent that it is practically abandoned in the French hospitals, notwithstanding the early trials by which Roux connected his illustrious reputation with staphyloraphy. The French surgeons now entertain the idea that, on the whole, the defect is best left to mechanicians. . . . . But it is a very doubtful question whether surgery is exalted by thus surrendering its triumphs, and calling in the aid of a mechanist to supply defects which may be remedied by their surgical obliteration. Surgeons undertaking staphyloraphy should, however, always bear in mind one circumstance connected with the results of the operation. The most complete success in restoring the palate by union of the cleft by no means implies restoration of the articulation to a natural or intelligible standard. Long after, or even for ever after, the success of the operation, in a surgical sense, the patient may continue to speak in a manner hardly less unintelligible and disagreeable than before. The use of the new palate can only be acquired by careful and intelligent practice in the mechanism of articulation. Much perseverance and careful tuition are constantly necessary to attain this end." *I can readily conceive, however, of rare presentations, where, with abundance of material, a long uvula and a good union, without much injury to the muscles, clear and distinct articulation ought to follow.* Indeed, I have it upon the very excellent authority of my friend Dr. Mussey, of Cincinnati,

that a patient of about twelve years of age for whom he operated a few years since, is now enabled by the result of that operation to articulate perfectly. But in a large majority of cases, I think I am justified in saying that such a result is impossible. My reasons for so sweeping an assertion are as follows:—The newly formed septum is too short at the boundary of the fauces, and generally somewhat more depressed than it would have been if it had united during its formation, thus contracting the passage between the tongue and the velum; the power of the levator muscle has been much weakened by the knife; the newly formed septum is either taut or paralysed, and from this combination of causes the passage through the nares remains permanently open, thus permitting a large volume of voice to escape without the power of the tongue to exercise any control over or modify it. The ability to articulate any spoken language correctly must remain an impossibility so long as the velum and pharynx are unable to meet, and at will shut off that passage. I apprehend that on this point alone rest all the failures of whatever treatment, for the difficulties to be overcome at any other point are comparatively slight. If staphyloraphy, then, comes so far short of accomplishing in a majority of cases all that is desired, we are very naturally led to inquire, is there any hope from any other source?

Obturators have for a long time been resorted to for this object; and when we consider that probably the earlier applications of this instrument were for perforations of the palate induced by accident or disease, and that their good offices were made apparent immediately, it is not to be wondered at that much was expected from their use in congenital cases, and especially so when the true principle upon which an instrument should be adapted was so little understood. It is hard to reconcile the statements which have passed into history of the perfect results obtained by their use in congenital fissure. An obturator properly adapted as a bridge to span a simple perforation of the hard palate, from whatever cause induced, will accomplish all that any treatment can; but there its mission virtually ends. To claim that, with a fissured velum, the gap can be bridged over, or the posterior nares plugged and perfect articulation will follow, is to claim an absurdity—a total impossibility. A great deal of ingenuity has been wasted in their construction, and the claims for them must have been made in advance, without waiting for the proof. In the present state of science and art our only remaining hope of relief is the substitution of an elastic artificial appliance to fill up the gap. This simple idea is not a new one, neither is the application of it of recent date. Elastic artificial vela have been made, or attempted to be made, of some form or other, almost ever since the use of india-rubber for mechanical purposes, and I do not know but of other materials long before. One thing, however, is certain—the application of suitable elastic material in skillful hands for the treatment of these cases is capable

of producing far more satisfactory results than have heretofore been derived from any other source. The indications to be fulfilled by such an appliance are—an obturator, or covering for the cleft, which shall be perfectly adapted to the muscles against which it is to lie; shall be flexible, susceptible of all the motions of the velum or soft palate itself; shall be durable; easily detached and replaced by the patient; and, in a word, shall be so under the control of surrounding muscles, when *in situ*, that the patient has the power

Fig. 1

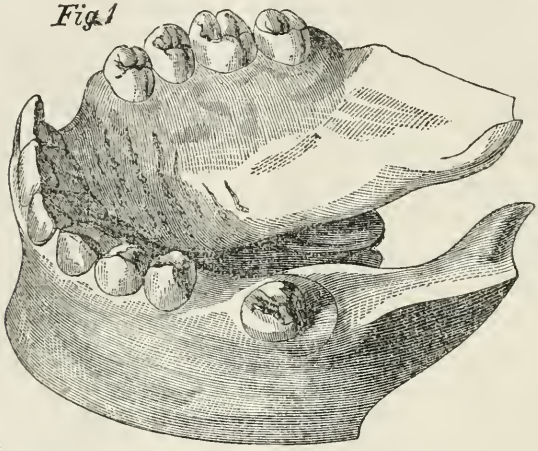


Fig. 1 represents a model of a fissured palate, complicated with hare-lip on the left of the mesial line. There is a division also of the maxilla and the alveolar process: the sides being covered with mucous membrane which come in contact with each other, but are not united. The left lateral incisor and left canine tooth are not developed.

Fig. 2

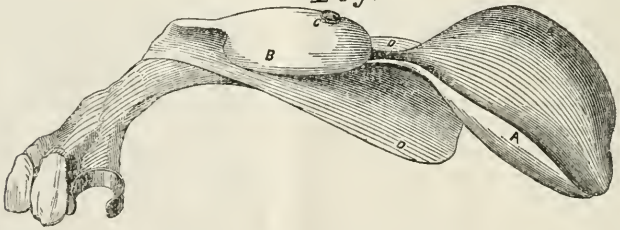


Fig. 2 represents the artificial velum, as viewed from its superior surface, together with its attachment and two artificial teeth to fill the vacancy.

The lettered portion of this appliance is made of elastic vulcanized rubber; its attachment to the teeth of hard vulcanized rubber, to which the velum is connected by a stout gold pin, firmly imbedded at one end in the hard rubber plate. The other end has a head, marked C, which being considerably larger than the pin, and also the corresponding hole in the velum, it is forced through—the elasticity of the velum permitting—and the two are securely connected.

The process, B, laps over the superior surface of the maxilla (the floor of the naris), and effectually prevents all inclination to droop.

The wings, AA, reach across the pharynx, at the base of the chamber of the pharynx, behind the remnant of the natural velum.

The wings, DD, rest upon the opposite or anterior surface of the soft palate.

Fig. 3

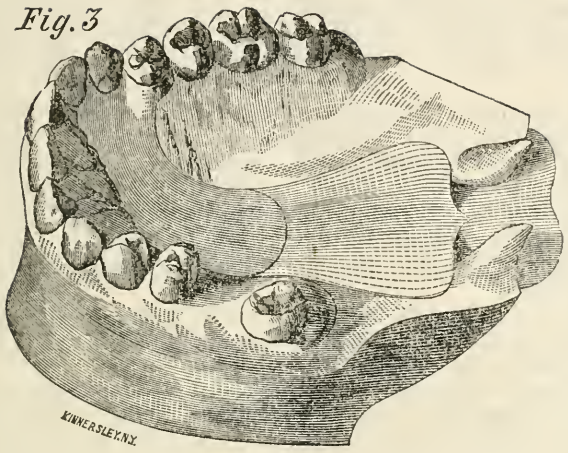


Fig. 3 represents a model the same as Fig. 1, with the appliance, Fig. 2, *in situ*. The wings, DD, in Fig. 2, and the posterior end of the artificial velum only, in this cut being visible.

which in a normal state he would possess, of directing the voice at will either through the mouth or the nasal cavity, or both, as desired.

Such an instrument as that described has been brought to such a state of perfection that I have no hesitation in saying that it can be adapted to any case of congenital fissure of the velum that is usually seen, whether complicated with a fissure of the maxilla or not. It can be made so as to be retained *in situ*, without danger of misplacement; can be worn all the time from the first hour without discomfort; is capable of being raised and depressed, also to allow the sides of the fissure to contract (as in the process of deglutition) without interference, and is so simple that a child cannot disarrange it to its detriment. Such an appliance renders it perfectly possible for the patient to learn to speak well.

The physical and mechanical difficulties to be overcome in the

The mechanical manipulations necessary in the construction of this instrument were described extemporaneously at the second meeting of the Society given to this subject, and held October 4th.

It will be impossible to reproduce those remarks in full in connexion with this paper, but they were based upon the description already given to the profession, and found in the last number of "Harris' Dental Surgery." The method there described is the same in all essential particulars as now used, the only important difference being in the form of the instrument, which will be readily apprehended by a comparison of the illustrations in that work with those in this; but the manner of producing it, with some unimportant variations, being the same.

adaptation of this artificial velum are a serious obstacle to the operator, for on the nice adjustment of the instrument to all the parts surrounding the fissure depends entirely the comfort with which the patient wears it, and the consequent use he will make of it.

The movements produced by the superior constrictor muscle of the pharynx upon the remnant of the velum in the act of deglutition will be remembered. In the proper adaptation of an appliance arrangement should be made for this movement. If not provided for, the act of deglutition would compel it to fold upon itself, and thus interfere with that function; or, if too unyielding, it would irritate the surrounding tissues, until it could not be borne.

It is so delicate in its structure that I have never known a single instance of irritation or inflammation of the tissue in contact with it when properly adapted.

It is supported *in situ* by resting on the superior surface of the palatine or maxillary bone in the vicinity of the apex of the fissure. It is retained by a very simple attachment of gold connected with it near its apex, and reaching to one or two of the teeth, with sufficient hold around the tooth to prevent its slipping off. But even the presence of natural teeth is not essential to retain it firmly and properly in its position, as in one case which I had under treatment the patient had not a natural tooth in her mouth, and an entire upper and under set of artificial teeth was adapted, and to the upper set of teeth was attached the artificial palate, which was worn with as much satisfaction as any case that has come under my observation.

There are many points of physiological importance developed by this experience, which would be most interesting to dwell upon did not limited time prevent my presenting them in full. To some of them, however, I must briefly recur.

The intellectual capacity of the patient exercises a greater control over the rapidity and amount of improvement than the peculiar physical conformation of the defect. A musical ear, cultivated to a nice distinction of sounds, is of material benefit in making the most of this appliance. The age should also be taken into consideration, and as early an age as the patient would take an interest in developing its benefit would undoubtedly be preferable.

The improper position in which some of the organs of speech are placed in the efforts of the patient to articulate distinctly becomes so habitual as to be almost impossible to overcome, and manifestly the earlier the age at which this is attempted, before these habits become firmly fixed, the better. I have, however, in one instance, adapted an instrument for a patient over thirty years of age, and in another for one over forty years of age, both of whom derived very marked benefit from its use within a very few months.

The earliest age to which I have adapted these appliances is

eight years, and of all ages varying between these extremes. Again, the sensitiveness of individuals to the defect, the mortification experienced in the exposure by their speech of this deformity, will prove a powerful incentive to their practice and the consequent rapidity of their improvement.

It is astonishing with what entire freedom from discomfort or annoyance the velum is worn immediately on its introduction. I have had but two patients in whom there was any irritation or inflammation in consequence of wearing it; and in those two it passed away entirely within a day or two, and only in rare cases have they ever experienced even a lameness of the surrounding muscles.

It will naturally be asked, what has been the result of this treatment in any number of cases. I can state most confidently, a decided improvement in speech within a very few weeks, a clearness and distinctness of utterance which the patient never showed before. In some cases this progress has been so rapid that, within a period of six months after its first introduction, the wearer would not from his speech be suspected by the ordinary observer of possessing such a deformity; and in every case, within a few months the speech has improved so much as to render it perfectly intelligible to strangers without repetition. It must not be supposed from these statements that there is any marked change in articulation immediately. There is almost always an immediate change in the *tone of the voice*, which is much less disagreeable than formerly, and this change is often mistaken for an improvement in articulation.

I desire to be distinctly understood, that the remarks in this paper apply to cases of *congenital cleft only*. I have referred only *incidentally* to fissured palate, from any other cause induced. I am thus careful to make this distinction because the application of an instrument to any other than congenital cases is so comparatively simple, and the results so quick to manifest themselves, that it forms no criterion by which to judge of the treatment of congenital fissure. A person who has once possessed the power of distinct articulation, may lose to a certain extent some of the organs concerned in that function, and the remaining organs may be so developed as to completely hide the loss. The educated ear then seems to exercise such a power over the defective organs as to develop an extraordinary usefulness. These malformations are manifested much more in the attempt to articulate some languages than others.

There is a most interesting field of inquiry for the physiologist growing out of this subject, to which I have neither the time nor the ability to do justice. I can only glance at it.

In the articulation of the Anglo-Saxon tongue the compressor nasi muscle is very seldom, if ever, called into requisition. In the cases of deformity which we have been considering, the escape of voice through the nostrils is so great that the individual

very soon forms the habit of using that muscle constantly. The result is, he acquires the power of making such sounds as do not belong to our language, but which nevertheless do form a very prominent part of other cultivated tongues. That muscle is much more frequently used in speaking the French language than our own. It will be readily understood, then, that these persons (other things being equal) can much sooner learn to speak the French language correctly than our own. With that language that habit assists them, with our own it must be broken up. It must also be borne in mind that it is much more difficult to break up the habit, when fully formed, of speaking a language badly than to acquire the power of speaking a new one correctly. The Irishman can much sooner master a foreign language than he can correct the brogue with which he speaks his native tongue.

In some of the cases which we have had under consideration it has already been proved that they learn to master a foreign language even more readily than their own.

In all cases where patients have been under treatment either by surgical or mechanical means, I would urgently recommend a course of practice which would tend to develop the latent powers. A course of lessons in articulation from a competent instructor, or the study of a foreign language, would be admirably adapted to that end.

In conclusion, I desire to add a brief extract from some remarks made by Mr. Pollock before the Odontological Society of London on this subject during the past year:—

"Mr. Pollock—As one who has taken some little interest in the question of congenital cleft palate, I consider it my duty to rise to pay my tribute of respect and admiration to Dr. Kingsley for the very eminently practical and ingenious apparatus which he has brought before us this evening. I look upon it as one of a series of those very great improvements that have come from the other side of the Atlantic, which have conferred so much benefit on mankind. I cannot but feel, from the experience I have had in the treatment of congenital cleft palate, that the operation for closing it by surgical means is not always a satisfactory operation. There are a few cases which certainly offer every facility and every advantage for the operation, and in those few cases we do succeed, in time, in procuring a considerable amelioration, if not almost perfection in articulation. I have in many cases observed a considerable improvement, I might almost say, an immediate improvement in the voice, and a subsequent and slow, but a very uncertain, improvement in the articulation. There is very often a large aperture between the mouth and the nares, which produces a most disagreeable cavernous *resonant sound* in the voice. That has been very much modified by operation in more than one instance, without, I may say, much material improvement in the articulation. So much with regard to the operation; but I am sure everybody in this room who has witnessed any number of

congenital clefts will feel with me, that there is a class of cases in which a surgeon would not only be rash, but he would be very much to blame if he undertook an operation. I allude to those cases in which the soft palate is what you may call thin and deficient in quantity, in which the uvula is but a small point projecting on either side from a little curtain, which is drawn up on each side of the fauces. I have myself refused to operate in more than one such instance. * * * I have seen cases with simple cleft of the uvula, defective in voice, and I have seen simple loss of the uvula produce defective voice. Whether it is that a certain escape takes place through the congenital cleft of the uvula, or whether it is that the contraction subsequent to ulceration produces general contraction of the velum I am not prepared to say; but of the fact there is no doubt, that with deficient uvula there is very often a defective voice. This apparatus of Dr. Kingsley's seems, as far as possible, I think, to meet the general requirements of the soft as well as the hard palate. It has the capability of adapting itself to the movements of the soft palate, either of stretching out to the extreme, that is required, or of contracting by folding over upon itself, and in this way I must say that I am rather inclined to give my verdict in favor of Dr. Kingsley's apparatus for the treatment of congenital cleft palate."

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